

## Claims

1. An optical data transmission system, the optical data transmission system comprising a hub, a kerb location, a converter, an optical router, and a plurality of ONUs, the ONUs being capable of transmitting respective data signals to the kerb location, the optical router being capable of routing wavelength channels having predefined wavelength ranges assigned to respective ONUs for transmission to the hub, and the converter being capable of converting the data signals into the wavelength channels.
2. An optical data transmission system according to claim 1 in which the data signals are optical signals.
3. An optical data transmission system according to claim 1 in which the data signals are used as pump signals to generate the wavelength channels.
4. An optical data transmission system according to claim 1 in which the data signals are within a wavelength range which does not include the wavelength or wavelengths of the wavelength channels.
5. An optical data transmission system according to claim 1 in which the wavelength channels are generated by a plurality of optically pumped sources.
6. An optical data transmission system according to claim 5 in which the optically pumped sources generate light having different wavelengths in order to define the wavelength channels having predefined distinct wavelength ranges.

7. An optical data transmission system according to claim 5 in which the optically pumped sources each comprise a laser cavity, mirrors defining the cavity, and wavelength selective elements inside the cavity.
8. An optical data transmission system according to claim 1 in which respective ones of the ONUs are sufficiently similar that they are interchangeable.
9. An optical data transmission system according to claim 1 in which the optically pumped sources are injection locked lasers.
10. An optical data transmission system according to claim 9 in which the injection wavelength is selected by a WDM and/or a AWG.
11. An optical data transmission system according to claim 1 in which the optically pumped sources are external cavity lasers.
12. An optical data transmission system according to claim 10 in which the optical router is within the laser cavity of at least one optically pumped source.
13. An optical data transmission system according to claim 1 in which the pumping light is at a wavelength different to the wavelength of light which is used to carry data traffic in upstream and downstream directions.
14. An optical data transmission system according to claim 1 in which the optical router is a WDM.
15. An optical data transmission system according to claim 1 in which the optical router is an arrayed waveguide grating (AWG).

16. A method of transmitting data in an optical data transmission system, the optical data transmission system comprising a hub, a kerb location, a converter, an optical router, and a plurality of ONUs, the method comprising the steps of:
- the ONUs transmitting respective data signal to the kerb location; and
  - the optical router routing wavelength channels having predefined wavelength ranges assigned to respective ONUs for transmission to the hub,
  - the converter converting the data signals into the wavelength channels.
17. An optical router for an optical data transmission system, the optical data transmission system comprising a hub, a kerb location, and a plurality of ONUs, the ONUs being capable of transmitting respective data signals to the kerb location, the optical router being capable of routing wavelength channels having predefined wavelength ranges assigned to respective ONUs for transmission to the hub, and the optical router comprising a converter to convert the data signals into the wavelength channels.
18. A converter for an optical data transmission system, the optical data transmission system comprising a hub, a kerb location, an optical router, and a plurality of ONUs, the ONUs being capable of transmitting respective data signals to the kerb location, the converter being capable of converting the data signals into wavelength channels having predefined wavelength ranges assigned to respective ONUs, and the optical router being capable of routing the wavelength channels for transmission to the hub.